

HANKS (H. T.)

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Levator Ani Muscle

In the Treatment of Injuries of the  
Floor of the Vagina.

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HORACE TRACY HANKS, M.D.,  
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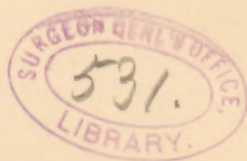
# THE IMPORTANCE OF UNDERSTANDING THE FUNCTION OF THE LEVATOR ANI MUSCLE

IN THE TREATMENT OF INJURIES OF THE FLOOR  
OF THE VAGINA.

BY

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# IMPORTANCE OF UNDERSTANDING THE FUNCTION OF THE LEVATOR ANI MUSCLE IN THE TREAT- MENT OF INJURIES OF THE FLOOR OF THE VAGINA.

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I SHALL preface this paper by making the statement, that whatever operation is resorted to for the repair of a laceration of the deeper tissues of the floor of the vagina, will be successful only in proportion as the surgeon succeeds in catching up and uniting the separated and gaping fibres of the levator ani muscle. It may be interesting for all of us to look back over our work in the past and see how many failures can be traced directly to a non-appreciation of this truth.

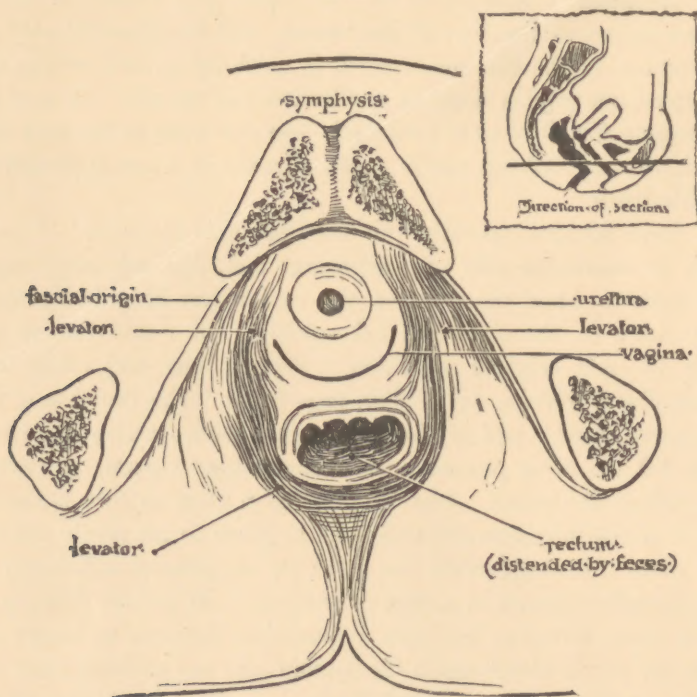
I have no new operation to describe and advocate. I only wish to emphasize this one important fact, that we must insert our sutures, when the floor of the vagina has been badly torn, deep down in the right and left sulcus, if we would restore the parts to their original condition. Emmet has said (*American Journal of Obstetrics*, July, 1890, page 678): "The function of the levator ani muscle and of the neighboring tissues acting in accord, is to lift the anus, perineum and surrounding tissues up toward the arch of the pubes. Just in proportion then as this muscular action is healthily exerted, will tone be given to the pelvic vessels, and when it is exaggerated the veins are compressed sufficiently to put the pelvic tissues in a state of erection." When the relation of the muscles, however, has been impaired so they can no longer act upon the pelvic bloodvessels the woman who has suffered from the injury sustains an equal loss of desire or gratification in her sexual life, and the engorged veins and weakened pelvic floor is the beginning of the subinvolved vagina, and is a direct encouragement for the formation of the rectocele.

In the *American Journal of Obstetrics*, September, 1889, is a very

interesting article from the pen of Dr. Dickinson, of Brooklyn. He there most carefully and methodically describes the different muscles which enter into the anatomy of the female vagina and true pelvis. I have selected three of these plates for insertion here because my experience in this line of study on the living and dead subject has taught me that they are correct, and they show at a glance the function of the muscle. I have consulted Dr. Huntington, Professor of Anatomy in the College of Physicians and Surgeons of New York, and he has told me that these original plates of Dr. Dickinson are very correct.

We must therefore remember that no deep laceration can occur without destroying the integrity of those fibres of the levator ani (see Fig. 1), which pass and meet above the rectum. And, further-

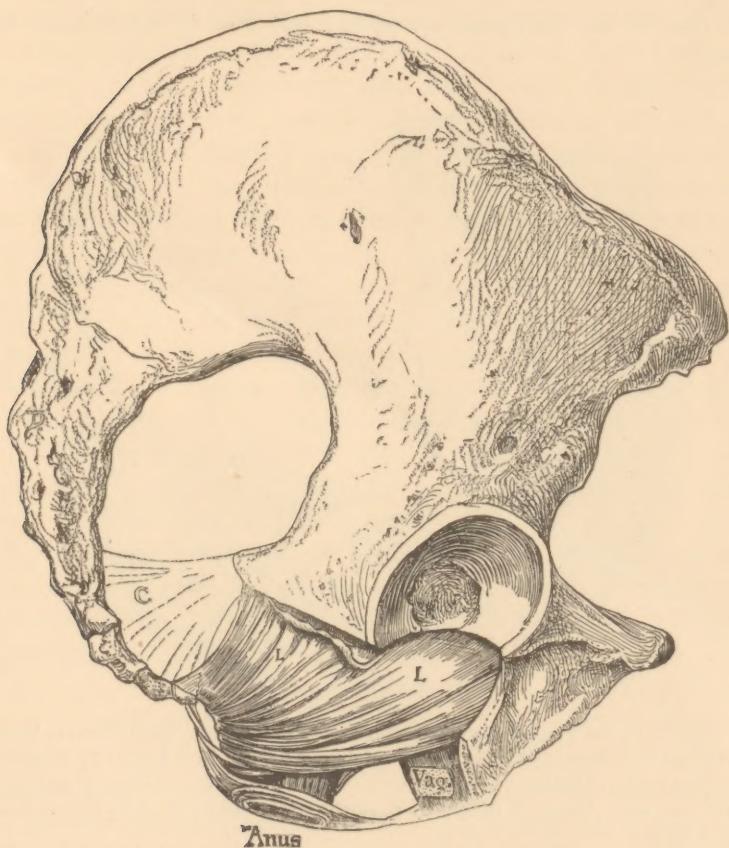
FIG. 1.



The levator ani as seen in a section which takes the direction of its lower fibres. (See small diagram in upper right-hand corner.) The muscle passes downward from the symphysis, sends a few fibres through to its fellows between the vagina and rectum. (The figure is not perfect and shows these fibres ruptured.) The larger number of fibres pass downward and meet under the rectum. No operation for rectocele will be successful unless these fibres between the rectum and vagina are brought together by deep lateral sutures. (Dickinson.)

more, when they give way, the transversus perinæi encourage a still further gaping of these fibres. With these few remarks respecting the importance of these muscles which give shape and strength to the vagina, I will say, further, that the *obstetrician* should try first to

FIG. 2.



The levator ani as seen when a part of the ischium has been removed. The lower bundles are strong, while a few fibres, less heavy, can be seen passing in front of the rectum and under the vagina. The sphincter ani is distinctly seen, while (C) coccygeus is faintly indicated. (Re-drawn from Luschka by Dickinson.)

avoid the accident. When, however, it does occur in spite of his efforts to bring the child through the vagina safely and quickly, he should as soon as possible, and within two hours, place the patient on the edge of the bed or table, and with a good light, and in the lithotomy position, prepare for immediate operation. After

thoroughly douching the vagina, and if the hands and forceps have been introduced into the uterine cavity, this organ, too, should be thoroughly irrigated with antiseptic warm water, the vagina should be well tamponed near the cervix; and if the perineum has been lacerated as well as the floor of the vagina, a long Hanks-Peaslee needle, with handle, should be passed around the base of the tear in the perineum up on the left side of the floor of the

FIG. 3.

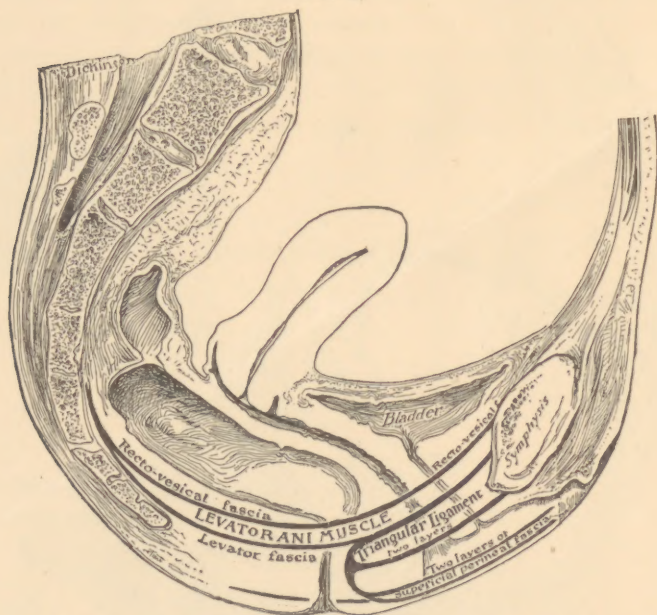


Diagram of the fascia of the pelvic floor in mesial section to show how the levator is backed by "strong and dense" sheets of fibrous tissue. Five layers: 1. Superficial perineal fascia, outer layer; 2. superficial perineal fascia, inner layer; 3. triangular ligament, outer layer; 4. triangular ligament, inner layer; 5. recto-vesical fascia. (Dickinson.)

vagina to a point just above the injury in the vagina. Then threading the needle with silver wire, silkworm-gut, iron-dyed silk, or better than either, No. 2 catgut, withdraw the needle. The opposite side requires the same procedure. The important rule to follow is to let the needle pass deeply to the right and left of the rectum before it comes up in the median line in the vagina below the cervix. The middle finger of the left hand should always be in the rectum during the operation to direct the needle in its course.

A two-inch, strong, slightly curved, round-pointed needle can be used with the needle-holder to accomplish the same purpose. If only the *floor* of the *vagina* is *injured*, and the perineum and fourchette are intact, as *often occurs*, a few catgut sutures can be inserted in the vagina, parallel to the circular fibres of the vagina. A short, slightly curved, round-pointed needle should be used. It is important that the needle pass down to the right and left of the rectum far enough to catch the fibres of the levator ani muscle. I cannot emphasize this rule too much. The second finger must be kept in the rectum the same as when the perineum is to be restored. No obstetrician or surgeon can judge of the severity of the injury or the course the needle must take until his finger is in the rectal pouch. When only the floor of the vagina is injured, the catgut sutures may be continuous. Iron-dyed silk or silkworm-gut may be used as an interrupted suture. When, however, an injury to the floor of the vagina has occurred and no immediate suturing will be allowed, then a small compress must be placed on either side of the vagina. And both these lateral compresses must be firmly held *in situ* by a large antiseptic pad, fastened tightly by a T-bandage. This treatment alone has often prevented the retracting fibres of the transversus perinaei from separating still further the torn edges of the levator ani, and a cure has followed.

When the immediate operation has not been performed, however, we find our patient suffering from a subinvolted and sagging vagina and a rectocele. And, of course, there will often have been a prolapsed, retroverted and subinvolted uterus. Here we can perform the last operation of Dr. Emmet, the one described as Hegar's operation (see *American Journal of Obstetrics*, March, 1890, page 272), the operation by Dr. A. P. Dudley, the operation described by and performed by myself (see *British Gynecological Transactions*, November, 1890), or the Skene operation, as described in his late work on *Diseases of Women*. Any one of these operations when well done will restore the parts when deep sutures are taken, provided the levator ani muscle has not been injured at the arch of the pubes.

Success does not depend upon the character of the suture material, when every step of the operation is made with proper antiseptic rules, but upon the bringing together of the separating and retracting fibres of the levator ani. The latest Emmet operation will always cure when well done. The median denudation and

deep lateral sutures which I have described with only continuous catgut sutures, if good gut is used, will also surely succeed. Let us not condemn an operation until we can do it as it has been described by its author.

The after-treatment in all these cases may vary. In the secondary operation we must feed our patient more generously than was our former custom. In the primary operation our treatment must vary according as the patient has lost much or little blood. And in all our cases we must keep the bowels loose.



